

[Announcer:](#) Bulletproof Radio, a state of high performance.

[Dave:](#) You're listening to Bulletproof Radio with Dave Asprey. Today's cool fact of the day is that, news recently made headlines across the world about a second HIV patient who went into remission after a stem cell transplant. That's kind of cool because it's two people on earth who've done it. This patient was positive for the virus since 2003. Got a blood stem cell transplant in 2016 because he had Hodgkin's lymphoma, which is a lymphatic system cancer. The blood stem cells came from a donor with a mutation that makes stem cells resistant to HIV infection. Subsequent testing over 12 months show that the patient's HIV had fallen to undetectable levels.

[Dave:](#) 16 months after the procedure, they stopped taking antiretroviral medication with the doctor's permission and has remained in remission ever since with HIV levels less than one copy per milliliter of plasma, which is pretty much not there. When that patient decided to do the stem cell transplant, which is an accepted procedure for Hodgkin's lymphoma, the physicians said, "Why don't we try finding a donor with a defect in both copies of the CCR5 gene?" That means that the donor's T cells couldn't make the protein, which means HIV really can't get into the cells. They thought it might work on HIV. It was one of those times where there was no additional risk to the patient, so they did gasp and experiment on a patient. Guess what else, it wasn't double blind or anything like that. They knew that it might work, and they tried it and it apparently did work.

[Dave:](#) The first patient who had an HIV remission in 2009 had a cancer treatment with two blood stem cell transplants from a donor with the same defect along with two rounds of full body radiation. This is now a cure from just one. You might have heard about CCR5 because the doctor in China who just allegedly and probably truthfully genetically modified a human embryo was introducing the same defect in order to make a baby that was resistant to HIV for life.

[Dave:](#) Now, here's what they didn't tell you in the research, that same CCR5 gene is associated with intelligence. By deleting that gene whether it's to cure HIV or maybe just to make a super baby, well you could be making a super baby, there's a lot we don't yet understand about genes. We do know that stem cells can do some amazing things in humans and it's critically important that you maintain your right to get access to stem cells. Countries around the world are now doing this to speed healing and to prevent things as big as organ transplants or joint transplants or at least to push them off for many, many years.

[Dave:](#) Even more importantly for broad numbers of people, if you have old injuries that hurt, that pain sucks energy because of those old injuries for long periods of time. As someone who's had arthritis in my knees since I was 14 and just thought it was supposed to hurt when you walked or when you moved, it was just a condition of living. I didn't realize other people didn't have that. I can tell you living without pain throughout my body is kind of a good deal. I really appreciate that. You may not even know the extent of the pain you're experiencing if it's been there for most of your life.

[Dave:](#) Speaking of which, you guys know that foreshadowing is now one of my core human skills. We might be talking about what do you think? Is it superbabies or is it stem cells? If you guessed stem cells you are right, we are going to talk about stem cells. That's because stem cells are one of those massively impactful things that were not possible 25 years ago. We just didn't know about this. People say, "Dave, how are you going to live to 180? How is it even possible?" Like, how are stem cells possible? You can actually pull cells out of your body, put them back in.

[Dave:](#) I've gone down that rabbit hole very deeply and I actually recently did a full body stem cell makeover at Docere Clinics in Park City, Utah. Which I did with the help of, well, we call it six hands. We had three doctors, two of whom are in the room with me today who did the procedure. We had a Johns Hopkins neurologist and a cosmetics specialist, antiaging specialist and an ortho specialist. What I did was I had my stem cells put everywhere in the body and we're going to talk about what stem cells can do for you today.

[Dave:](#) The two guests in the room with me today are Dr. Harry Adelson, who spoke at the Bulletproof (Biohacking) Conference and is mentioned in *Game Changers*. He's one of the very early doctors for using stem cells for chronic musculoskeletal pain. More than 5,000 stem cell procedures under his belt and has injected into more than 700 intervertebral disks. Harry did I say intervertebral right? Vertebral?

[Harry:](#) Yes.

[Dave:](#) There you go, see? Now I know what the word looks like, I don't how to say that. It's one of those words even as a professional biohacker I didn't go to medical school, that's why I have these doctors in the room, right? I would say he's one of the two guys out there for spine pain. He invented that full body stem cell makeover that I underwent. Joining us in the room today is Dr. Amy Killen. She's a former emergency medicine doctor, like my wife, Dr. Lana. She became more interested in preventive medicine and changed career course, so she focuses on prevention and regeneration. She partners with Dr. Harry Adelson at Docere Clinics. Dr. Adelson, Dr. Killen as I'm going to call you well, Harry and Amy, welcome to the show.

[Harry:](#) Great to see you again Dave.

[Amy:](#) Thanks for having us.

[Dave:](#) Now Amy on stage at the Bulletproof (Biohacking) Conference last year, I introduced your alter ego.

[Amy:](#) Yes.

[Dave:](#) Your middle initial is B, so you have the best rapper middle name ever, Amy B. Killen.

[Amy:](#) Dr. Amy B. Killen is in the house. Yes.

[Dave:](#) All right, that's cool. The only other person who's ever been on the show who even came close to having a name that cool was Mark Divine. The Navy Seal who has the name of a porn star. Now I told that on a show and I was happy he didn't kill me when I said that, so Mark if you're listening, love you brother. Now, if you are really into stem cells, you might want to check out episode 332 or 412 or 407 where we've talked about erectile dysfunction with stem cells and we talk about pain. We talk about healing in general. This is a core part of biohacking and something that you might say, "Oh that's expensive," here's the deal.

[Dave:](#) Harry has pioneered ways to bring the cost way down from where it was even three years ago. If you look at things like your iPhone or if you're one of those android people and maybe your android phone, there I just pissed off half the world, that is an example of you go back five, 10 years and those phones were garbage compared to what we have today. Yet the phones today are about the same cost, but they are so much better. I think we're seeing a drop in cost and an improvement in efficacy that's ridiculous.

[Dave:](#) Now, what I want to focus on in this episode is some of the specifics around "okay, what's happens if you do the most extensive possible stem cell procedure? There are some cool videos we're putting up about this. We'll go through the experience of that why it matters, but at a broader level for people listening, I want to talk about the stem cell through with aging and how important that is. Let's just open with that. What is the deal with aging and stem cells? Harry you want to start off with that?

[Harry:](#) Sure Dave. Well as we discussed in the prior episodes, any sort of musculoskeletal pain really, whenever you have healing after injury that is a stem cell-mediated event. The focus of my practice is the treatment of musculoskeletal pain. If we broaden that to look at tissue aging, I mean really this is entirely a stem cell-mediated event. Exosomes are filled with the items, the very items that communicate with all of your organ tissues to control inflammation and control oxidation. As those things spiral out of control, that is what causes the aging process of all organ systems.

[Dave:](#) I've been working on antiaging technologies in the nonprofit world for 20 years. Just educating people about what's causing aging and gotten to know the leaders in the field. My next book is around aging and what I'm specifically doing to live to at least 180. Stem cells are part of it because inflammation underlies pretty much all of the things that are likely to kill you. Inflammation happens in different people's bodies at different times for different reasons. If you get on top of handling oxidation, which is important, because that's how you make energy, oxidation is good. Too much oxidation's bad or oxidation the wrong place at the wrong time, not a good thing. Bouncing that as cool, but you've talked about something that we haven't covered in other episodes in detail, about exosomes. I like to call this stem cell juice. Is that a good definition?

[Harry:](#) Yeah, magic juice. Neil Riordan calls it magic juice.

[Dave:](#) What the stem cells are doing when they go in is, they're sticking to a side of injury or inflammation and then they secrete these exosomes for a while. When we did the full body stem cell makeover, we did was it 11 vials of exosomes?

[Harry:](#) It was a huge quantity of exosomes. You know with stem cells, stem cells essentially have two superhuman powers. One is that what makes a stem cell a stem cell, the very definition of a stem cell, a stem cell is a cell that has the ability when it divides to either cell for new. Turn into a new version of itself or differentiate, turn into a target tissue cell. When used therapeutically we used to think that was the main mechanism of action. We put these stem cells where we want them to and then they would turn into the type of tissue that was required. In fact, that's not at all what's happening. It's the second superhuman power, which is the paracrine effect.

[Harry:](#) The paracrine effect is the stem cells ability to sort of direct traffic. They're able to recognize that they're in the presence of damaged stem cells, or I'm sorry, damaged tissue, damaged normal tissue cells. Then they release these vesicles filled with growth factors called the exosomes that actually trigger the growth of new, healthy connective tissue. They kill invading microbes. They control inflammation and they launch the growth of new healthy blood vessels. This is precisely what needs to happen for normal tissue healing to occur.

[Harry:](#) Now in the realm of antiaging medicine, there's a very interesting paper that was just published in this last year by a doctor named Joshua Hare out of University of Miami. In this study he's actually proven the use of stem cells for frailty associated with aging. This is fascinating, because antiaging medicine, age management medicine, this is a huge field. There's really very little in the scientific literature proven to actually reverse frailty associated with aging. What this doctor did is he took a culture expanded bone marrow stem cells from young donors. Then he gave them to elderly patients. Now first of all frailty associated with aging, there's several different ways to classify that. Basically, it's loss of grip strength, slowing of gait, involuntary weight loss, loss of energy and decrease in activity.

[Dave:](#) When does that normally hit people?

[Harry:](#) Well I think with you it hits you early in life.

[Dave:](#) I was 23.

[Harry:](#) Yeah, but it's those main five things usually combined with some degree of cardiovascular disease. That can be measured with plasma markers, C-reactive protein, interleukin 6, yeah, and tumor necrosis factor alpha. What he did is he took these patients who I believe they were over the age of 70 who displayed these elevated C-reactive markers and had at least three out of the five of the physical characteristics administered culture expanded stem cells. He found that in pretty much every person they had improvement in all of those areas. I mean this is really a landmark study because this is one of the first really evidence-based approaches to antiaging medicine.

[Dave:](#) It's interesting if you look at Captain America. He gets in this weird metal contraption machine and then they plug in some sort of gas surrounded electrical current and then he comes out and he's two feet taller and full of muscle, et cetera, et cetera. That's not particularly realistic, but you can take stem cells now in someone who's aging, and you

can give them their brain back. You can give them what is it, several more years of functional movement with the treatment? Assuming it goes right, assuming they're a good candidate and things like that. Are we at the point where you would feel comfortable medically saying this is a common or at least a possible outcome?

[Harry:](#) Well I mean that has certainly been my experience having done stem cell medicine for nearly 10 years now. That's really how full body stem cell makeover came about. Full body stem cell makeover over the years I've developed the reputation as the guy who does big treatments. I get a lot of farmers, I get a lot of ranchers, I get a lot of oil field workers. I get these people who have arthritis throughout their entire body.

[Dave:](#) They're kind of wrecked.

[Harry:](#) Yeah, there are people who've just really, I affectionately refer to as having exceeded the terms of their warranty. They've worked very, led very hard lives over many years and they've paid the price. Because I've never billed insurance and just because I want to help people and then on top of that because I work with such good anesthesiologist who put people completely to sleep so I can do big treatments. Over the years I started doing these big treatments, these big stem cell treatments, the entire spine, both hips, both shoulders, both knees. Then in 2016, in early 2016 when I first treated you and then we started getting more and more biohackers in, I started getting people saying, "Well can't you just treat my entire body in a single sitting?"

[Dave:](#) Yeah, like me.

[Harry:](#) Right, yeah and I thought, "Yeah, sure, let's do that." Couple of years ago we rolled out this full body stem cell makeover. Amy and I do it together, so I do every moving part in the body. First, we take a large volume of bone marrow concentrated down to bone marrow aspirate concentrate.

[Dave:](#) You took about half a liter of my bone marrow.

[Harry:](#) That's right, yeah, that's right.

[Dave:](#) Now, the first time you took my bone marrow it was in 2016, and I didn't do the whole-body thing there. We did actually close to whole body.

[Harry:](#) We did a big treatment.

[Dave:](#) That was about four hands right in terms of we did what the two of you together could do. I remember I walked in the door I said, "Look I don't have a lot of time, so could we just do everything possible. You're going to go to the trouble of getting my fat derived cells and my bone marrow." You guys were like, "All right. We're going to do that." I was awake the whole time, we didn't use sedation, I didn't even take ...

[Harry:](#) You had the option to be sedated, and you chose not to because you wanted to film it.

[Dave:](#) I wanted to see what it was like, and I also don't like nitrous oxide does for my specific genetic mutation and my nostril pathways. I feel like crap when I get nitrous oxide for several days actually. Which is why when people are doing that bone marrow, I'm like, "I'm out." Those little whipped cream containers of nitrous oxide, that stuff for me like I don't want to take the hit even though I probably would have felt better. I actually without anything other than a local anesthetic, I experienced a bone marrow aspiration. I was a little bit scared, but here's the deal.

[Dave:](#) It's not particularly painful. It's odd and you feel things rattling in your skeleton that really should never sound like that. You feel that sound, which wasn't particularly fun hearing it come from inside my skeleton instead of from outside. You know what, I've had a lot worse things that are way more painful happen to me. Like in the overall skim of things, the fear is worse than fear itself. I would say it wasn't that big of a deal. It was nicer when it went in for the six hands though to just like wake up and say, "Oh it's done." You took quite a lot of bone marrow. I'm a fan of the sedation without general anesthesia which has its own set of risks. All right so now you got half a liter of bone marrow. You go in with liposuction, you pull some fat out.

[Harry:](#) We have the option of additionally doing a lipoaspiration isolating stem cells from your fat and then we use these exosomes, which we've talked about in prior episodes. Exosomes are the growth factors from placental drive stem cells without the actual other person's stem cells. Without the other person's DNA. You're getting the active ingredient of culture expanded placental drive stem cells without the other person's DNA. We super charge your own stem cells with these exosomes. What we think, you know the exosomes, the membrane of the exosomes are identical to the membrane of your stem cells. We think that your own stem cells actually absorb them into themselves, there by turbo charging your own stem cells and effectively making them that of a younger person. Then I do essentially all my injections. We inject from the base of the skull down to the tailbone, both sides, all of the set joints.

[Dave:](#) Every vertebra each one on each side.

[Harry:](#) Every vertebra. We do epidurals in the cervical spine, the thorax spine and the lumbar spine. We put stem cells into the epidural space, and this is to hopefully to help prevent sensual synopsis in the future. Flip you over, inject stem cells into both shoulders, both elbows, both wrists, both thumbs, both hips, both knees, both ankles, both great toes. Then I pass it on to Dr. Killen.

[Amy:](#) I also work at the same time as him, but I do the hair injections, so for both men and women. I do scalp injections to try to improve the health of the hair and possibly restore hair depending on what's going on with the hair.

[Dave:](#) Can I just say it?

[Amy:](#) Yeah.

[Dave:](#) I would rather have bone marrow aspirated than get those hair injections, because those things hurts. Jesus H.Christ.

[Amy:](#) They do, but not if you're asleep. If you're asleep it feels great.

[Dave:](#) No, this time I woke up I couldn't even tell you did anything except my hair was messed up. In fact, I looked pretty amazing when I got out of that.

[Amy:](#) Yeah you did. No, the hair injections can be uncomfortable. I do facial injections, I do injections with a needle under the skin as well as the micro needling with the little tiny needles on top of the skin and topical application. Again, of the stem cells from fat as well as PRP and exosomes. Then the sexual injections which yeah, the penis injections for the men, so the P-shot for men and the O-shot for women. I do all of those things kind of while Dr. Adelson is finishing up with his injections. We're working simultaneously and so you're not actually under sedation very much longer.

[Dave:](#) Amy, are there any cosmetic procedures I could have done that I didn't do with you?

[Amy:](#) Well, there are a whole bunch of things you can do cosmetic procedure wise. You know there's lasers of all different types, there's fillers, there's Botox.

[Dave:](#) I mean stem cells specifically.

[Amy:](#) But, with stem cells as far as I know, we did most of the things that are being done right now.

[Dave:](#) Most, what are the ones I missed?

[Amy:](#) The only things also I don't do currently are like the fat transfers where you add stem cells to the fat, and you actually directly transfer both the stem cells and the fat. Some doctors do that it's just not something that I do.

[Dave:](#) That sounds kind of icky, because then you're actually, that's a fat transplant more than just the stem cell.

[Amy:](#) It's a fat transfer, it's different yeah.

[Dave:](#) Okay.

[Amy:](#) It's a different procedure, so what I'm doing is concentrating your stem cells and using those directly as an injection as well as a topical applications and micro needling. I find that that is great for all kinds of things like improving the texture of your skin, the tone, the color, hyperpigmentation or dark spots can be improved. Fine lines and wrinkles can be improved and just generally patients tell me they just feel like they have like a glow to their skin that wasn't there before. Their skin gets healthier, which is what we're trying to do.

[Dave:](#) It takes about six to nine months for this all to kick in right, in terms of the new layers of skin and all that? Mine was what, three months ago when I did it?

[Harry:](#) Closer to six.

[Dave:](#) It was close to six months ago? My calendar in my head is entirely inaccurate. One of the other things that I definitely noticed is in addition to reduction and stuff going on in the body and already from the first treatments, I really didn't have a lot of residual pain except I had two things going on. Both of which are substantially improved now. One is, I had a separated left shoulder from the last, I think it was the last Bulletproof conference. I never even felt the injury, but I think I picked up someone at the conference just under the arms and I lifted them up. Instead of pulling them towards me and lifting them up the way you would intelligently, I lifted them up kind of at the end of my arms. Just that amount of leverage on my shoulder gave me a bone on bone shoulder separation that was partly healed. I think that this treatment totally nailed that.

[Dave:](#) The other one I finally figured out what's going on, I go through airports a stupid amount of the time. I've got a rolling bag because you don't want to carry everything on your back which is what you're used to do, because that compresses all the nerves in your upper back. The problem is, if you're pushing a heavy backpack on those carpets and airports for long periods of time, I actually had weird pain like really substantial upper back pain, just on the right-hand side from holding the handle and pushing a heavy bag over carpets for God knows how many miles. That's one of those repetitive stress things. You went in there and worked on that and it took about maybe a month and it's gone. That stuff completely healed, and it had been bothering me for like a year and I didn't really know what it was until after the injections. I said, that must be the trigger for it. So, thanks for that.

[Dave:](#) Then on the cosmetic side Amy, it's hard to say. People are commenting quite a lot on social and also just friends who've known me for a long time they're like, "What's up with your skin? I want skin like that." I'm hearing it more from guys my age. I grew up in New Mexico where well you wash your face every now and then if you get around to it. It's really more important that you brush your teeth and you're going to look distinguished no matter what. Now there's a whole bunch of people saying, "You know actually would like to look healthy and actually feel healthy and I'd like to have healthy skin and what's up with that?" I like to think that it's made a difference. I think it's too soon to say and it can take time, but I'm definitely looking really good and people have commented.

[Dave:](#) Then on the hair side of things, that's also one of those ... My hair's less gray than it was before, and that's something that's been noticed days before. I started turning gray in my early 20s and my mom was great by the time she was like 25, 26. It seems to run in the family. There's a genetic component there, but I noticed in the last three years mine had started turning more gray, possibly from some mineral things that I also changed. Post stem cells it's way less gray than it was, but there are still a few little streaks of gray in there, but the deal is it should be fully back to its normal color. Have you seen stem cell patients restore their color?

[Amy:](#) We've had patients who have definitely commented on the gray is getting better, right? Both Harry and I have and that may be from the hair injections as well as from some of the IVA injections. We don't know for sure, but we've definitely had feedback from patients that the hair is not only just healthier and maybe thicker, but it's also not quite as gray.

[Dave:](#) Someone told me the other day that I had CEO hair, is that what it does?

[Amy:](#) Yes it does, it can turn you into a CEO. Come get your stem cells.

[Dave:](#) It's funny because some of the stuff it's just cosmetic you say, it's just vanity. Part of aging doesn't have to be falling apart, which is the way a lot of us visualize it. I've worked really hard on changing my picture of aging which for almost all of us it's some combination of tubes, monitors, wheelchairs, forgetting your own name and it's probably diapers to be really straightforward. That is not actually what aging looks like throughout almost all of history, that's very recent things. I'm just rejecting that outright, where age, aging when you do it right it means that you have the ability to walk around at your own power. You have the energy to play with your grandkids and do what you want to do. You actually get to step into that position of the village elder, where you've got the experience and you're willing and able and happy to share it to make the world a better place.

[Dave:](#) Death looks more like what happens in your bed when you're done with everything, versus that picture that we've created of just this long convalescence. I think stem cells are one of the things that's going to change that reality for people, which is really cool. Along the way wouldn't you like to look like you're 50 years, 60 instead of 150? That's my plan anyway, and I'm very happy to say I'm not going down without a fight. In fact, I'm not just going down.

[Amy:](#) I think it's important I tell patients that for me, for my procedures I'm working with them on trying to help their confidence and help them feel better. It may be something that doesn't seem that important, but whether it's your hair is falling out or your skin is not as youthful as it used to be, or you're having some sexual problems or dysfunction, it could really affect how people, how they feel about themselves. How they present themselves, how they go about their day. If I can improve just a little bit, then it can really change how they're interacting with the rest of the world. It may not seem like a big deal, but it actually can be a big deal for people.

[Dave:](#) I've got several really close friends who are in their 70s or 80s. I started making a habit of having much older friends in my 20s when I started running this antiaging nonprofit group. Like that guy is in his late 80s, he's dating someone in her 40s and he's full of energy. He wants to call me at 11 o'clock at night and talk about his latest idea. I think that's the path that I want, and I've learned so much there. Even today, well not today, but this week I had a conversation with a good friend who I think has actually been on this show a while back.

[Dave:](#) Anyhow, he's like, "Dave, this old age thing totally sucks," and I think he's pushing 80. He's like, "You know what doesn't work all the time, but works most of the time and I've still got my hair but I'm always fighting to keep it. Things hurt and this kind of sucks, but I'm generally positive, but now I've just, blah." There are frustrations like that, and we have this mindset that says, "You shouldn't age, you shouldn't look old." There's something called healthy aging, you can look at someone and say, "That's someone who really healthy, but they've got mileage," and that's the thing that I'm looking for. The idea that we're all going to look like we're 25 forever, we'll probably get there. We're just not right there now, but the idea that it's normal and healthy to have the wiser look of age, but it doesn't mean you look like a truck ran over you with aging. That's where I think you're doing Amy now as you're saying, "You know what, I have healthy flexible skin at whatever age I am. You'll probably going to want to look at me say, "You're going to guess in 20 years of my age, but you're probably going to guess 20 years in the proper direction."

[Dave:](#) What is the biggest transformation that you've seen on the cosmetic side from doing stem cells in people's faces?

[Amy:](#) People look like themselves, which I think is important. I'm not changing the way that they look, they're still themselves. Just a lot of people just come and say that their family and friends have commented on the fact that they look very well rested. That they look very vibrant. That their skin is like I said is glowing and looks really healthy. The procedures that I do, we're increasing your own collagen production, your own elastin production, hyaluronic acid. These are all things that start to go down at about age 25. 25 is like when their peak skin happens and then after that it's all downhill. We're trying to get your own skin to increase production of these things that are really healthy and to make your skin look healthy and behave healthy. It doesn't change the way you look as far as, it's not like filler where you have like fake lips or you have weird things in your face. It's you, you just look like a better version of you and that's what people tell me all the time.

[Dave:](#) This is a different thing. You get antiaging, the vast majority of this going back 20 years ago was, we're going to just do a nip and a tuck and face lift here. A little bit of sticking some plastic in your forehead here or whatever the heck else they did. Which was purely cosmetic, but it wasn't really antiaging. It was sort of like tattooing makeup on or something like that. What you're talking about there is restoring it from the inside out, so the systems of healing are turned back on. This is that revolution that I think a lot of people haven't internalized yet.

[Dave:](#) I'm happy I got to get that done during the whole-body stem cell makeover because I was unconscious the whole time. That stuff does hurt. Could be here's the first time we did some of that stuff, I think halfway through like, "Let's not use that stuff because it burns. I'm grating my teeth here," but when you grate your teeth and scrunch up your face when there's a needle in your face, it's not a good idea. I think you guys went down a really good path doing the whole-body thing.

[Dave:](#) Harry, what's the biggest I'm going to call it a miracle healing you've seen? Tell me about a case or two of people who've done the whole-body stem cell makeover who had unusually good results.

[Harry:](#) Well usually that's for people who are already start with some degree of pain. We've had a number of people who we've done full body stem cell makeover on who really are for the most part pain free. They're doing it entirely for antiaging purposes and because they want to remain pain free well on up into advanced stage.

[Dave:](#) I'm a prime example of that. I have like 5% of the pain I used to have.

[Harry:](#) Exactly.

[Dave:](#) Are there people getting out of wheelchairs and stuff like that?

[Harry:](#) Where we really see the most dramatic outcomes, now I only treat musculoskeletal pain, so I don't treat spinal cord injury for instance. Where we really see some amazing outcomes is with dehydrated disks, desiccated disks. These are frequently people, it's usually young people who've had some sort of injury. A very common injury is from dead lifting and their MRI shows that one or several of their lumbar disks are dehydrated and that shows up as black on MRIs. When you look at the TT-TG waiting MRI white, white, white, black.

[Dave:](#) It's like a tooth with a cavity sort of.

[Harry:](#) Right.

[Dave:](#) Yeah.

[Harry:](#) Now its normal size and shape there may or may not be some degree of herniation, frequently there isn't. People describe this is a midline pain, dead in the center, usually right about belt line or slightly lower and leaning slightly forward makes it much worse. Like holding something out in front of them and leaning forward especially like putting a baby in a crib. That's just like the worst thing they could, that's something that surgery has nothing to offer. I mean the only surgery that really would be at all helpful would be fusion, which is a terrible option, because that's a permanent solution. It can permanently make you worse. What we found is, putting this combination of bone marrow with fat stem cells with exosomes directly into the intervertebral disks using X-ray guidance has in many cases resulted in a complete cure of pain.

[Dave:](#) Okay, so that's pretty profound. Have you found things like ozone injection or MSM cream or some of the other things like that when it comes to back pain?

[Harry:](#) Yeah, I've much less experience with those things.

[Dave:](#) I mean have you seen patients who've had those and then come in for stem cells and something else?

[Harry:](#) Sure, yeah. We're usually the last stop. It's really unusual that people would say, "Yeah, I started getting this back pain and I haven't really tried anything, so I came to you first." Usually, "I've tried this, I've tried that. I've consulted with the surgeon. I've been to the chiropractor, I've been to this." Chiropractors or a good chiropractor can help 90% of the patients.

[Dave:](#) It's a good place to start, yeah.

[Harry:](#) Yeah, exactly. I would rather be the last stop. If something else, if MSM cream or something is going to work, then they should just do that. Usually we're the people, we get the people who've tried everything, and nothing has helped them.

[Dave:](#) Well that's definitely going to be the case for chronic pain. When it comes to the antiaging side of things, my strategy is, you know I'm going to do everything. I'm eating a diet that doesn't cause inflammation. I eat a Bulletproof Diet. I take tons of Bulletproof collagen stuff and you could say, "Dave stop plugging your products," but there's a reason I do what I do. It's because I don't want to die when I'm old. I don't want to die actually when I'm young either. I believe that stem cells systematically are one of the many things that we can do that maybe aren't when we're at the very end of what we can do. It's just cheaper and easier to stay young than it is to get old and reverse it.

[Dave:](#) I've spent so much time with older people who are reversing their aging and are doing things they're not supposed to be able to do. It just comes at great expense and cost compared to doing stem cells or changing your diet or exercising or doing all the things that you can do now just to hold the line for a while. It seems like just a fantastic shift in who's doing stem cells. Let's talk about the big gun that took it from the normal whole-body stem cell makeover to the six hands one. I'm the first person to do that and I think it's definitely a little extreme, but also living to 180 is a little extreme, as well. What we did there is, when I was unconscious you had a Johns Hopkins neurosurgeon on hand who flew in for the procedure. Walk me through what Marcella [Madera] did while you and Harry were injecting all of my various joints. Amy you were sticking needles in places that few people have seen.

[Harry:](#) Sure, so Amy and I have been doing four hands full body stem cell makeover for about two years. Dave, when we finally set a date for you to come in, I thought, "Here's the opportunity to do something special, I mean for the original biohacker, we've got to come up with something really over the top." I invited my dear friend, Dr. Marcella Madera who is, as you say, a Johns Hopkins-trained neurosurgeon fellowship trained in spine surgery. She got her Utah license and for your procedure I did my normal portion, Amy did her normal portion. Then Marcella injected stem cells, your own stem cells directly into your cerebral spinal fluid. She did an intrathecal injection in order to deliver stem cells theoretically directly to the brain. She also did some more advanced epidural injections along the entire length of your spine. Then of course when the six hands full body makeover includes some all three of us are on call for you and there's some other perks that go along with it. That was just about six months ago, and you look great.

[Dave:](#) One of the things that I noticed after this was a really marked change in my sleep quality. I've been tracking my sleep for a long time and my percentage of deep sleep just shot up and it stayed up to the point and in fact in less than an hour, even if I only sleep five hours. If I get less than an hour of deep sleep, it's unusual now. Before that's where I would pay first and my REM sleep was some days it was high, some days it was low. Now my REM sleep is always substantially high, and I have found some more herbal things that are helping to improve that. Nothing has shifted my deep sleep the way I think the six hands procedures did for me. It's really hard to say that that was the cause, but when I look at what else did I do that would be likely to do that.

[Dave:](#) The other thing that I think it contributed to and again I'm a guinea pig in this case, I'm in of one versus having tested this on 1,000 people or something. I noticed that I just naturally go to bed earlier. It shifted my circadian rhythm to be more like most humans. Ever since I was maybe 10 years old, I have been stay up till 2 a.m., it's just my natural time. I write all my books, I wrote *Game Changers*, *Headstrong*, all of them ... There's this cool thing that happens after 11 p.m. you just go into writing mode. Now I can actually go to sleep at 11. Before this procedure, that was one of those things that was so uninteresting to be able to do. I like to think that I'm sleeping like a 20-year-old and my sleep numbers are like a 20-year-old sleep numbers, which is remarkable. Last night I had a new record three and a half hours of REM sleep and seven hours of sleep.

[Harry:](#) Wow, that's great.

[Dave:](#) Now, Harry have you had six hands procedure even though you're normally two of the hands?

[Harry:](#) I want one. I'm trying to figure out which of my friends I'm going to talk into coming out to Park City to do it. No, I definitely want my entire spine treated. The people that we treated because a lot of times we'll get people who really just have lower back pain, but they've got a little bit of neck stiffness. Then they have this long laundry list of minor injuries. No major problem areas, but the people who decide to do it the way they describe it is, you know when you get a really great full body deep tissue massage and you feel great for two days after, then you kind of normalize after that. Well what people are saying is that, they have that terrific feeling that lasts months and years later.

[Dave:](#) You haven't done any yet, but you've definitely had some stem cells?

[Harry:](#) Oh for sure. I've had lots of little injuries treated.

[Dave:](#) Okay, so you normally treat them that way. How about the cosmetic stuff?

[Harry:](#) I haven't had any done.

[Amy:](#) Yeah, I've done some procedures on myself, not infrequently.

[Dave:](#) You do stem cells on yourself?

[Amy:](#) Not the actual stem cells because I can't do my own liposuction.

[Dave:](#) That's what I was thinking.

[Amy:](#) I have had it done and I've done exosomes and PRP [platelet-rich plasma] injections on myself. I do microneedling on myself fairly frequently, couple times a year. Yeah, I've tried to build up a tolerance to needles on my own face.

[Dave:](#) I have pretty good tolerance for needles almost anywhere and even in the face. I've injected my own face a few times. It's just not that comfortable.

[Amy:](#) Yeah, it's not comfortable, but it's worth it.

[Harry:](#) It definitely flies in the face of self-preservation.

[Dave:](#) Both of you though look very, very healthy. People who watch the video shot on YouTube, I mean you can check it out. These are two very healthy looking people. Having access to stem cells I think is one of those things that's a good move. Now let's talk about the hard stuff. A lot of people say stem cells are for rich people. What's your take on that Harry?

[Harry:](#) My experience is that this treatment is for people who have their priorities straight. This is for people who value their own bodies and value their quality of life. We don't necessarily get rich people, we get people who want to be out of pain. At our clinic we have two price points. We have the price point to see me. We have the price point to see my associate who is excellent. I mean you know me, I'm enough of a perfectionist, that if I didn't have complete confidence that my associate would do an excellent job, I wouldn't let him do anything. He's almost half the cost of me.

[Dave:](#) Okay.

[Harry:](#) Then starting this June we're rolling out a tithing model. We're going to be dedicating one day a month to doing stem cell procedures, not at no cost, but it's going to be people who have financial need. Who can demonstrate that they are in financial need and we are going to do stem cell treatments in exchange for documentation of community service hours?

[Dave:](#) I think that is so epic. People who need the stem cell procedures for their quality of life can't afford, police officers, teachers, people like that.

[Harry:](#) Yeah, 60 hours of community service will buy you a treatment of your joints and 100 hours community service will buy a treatment of your spine.

[Dave:](#) That's awesome. You're giving back to local community, and it seems like overtime even since we started doing procedures together, the costs have come down just in general. I feel like that Moore's law of stem cells is happening. Have you seen fundamental

changes in the technologies? Is it easier to get stem cells out than it used to be? Is it cheaper? Is it faster?

[Harry:](#) It's just more people doing it.

[Dave:](#) Got it, okay, so there's more supply now?

[Harry:](#) Mm-hmm (affirmative).

[Dave:](#) All right. It's a big part of my goal in doing Bulletproof Radio to increase the demand for stuff that works and therefore to increase the supply of it. There's more people doing it and some with more experience, some with less. That's making it just more accessible to everyone. What's the starting cost for someone who comes in to say, "Do knees," or something like that?

[Harry:](#) With my approach I do a kitchen-sink approach. I do stem cells from your bone marrow combined with stem cells from your fat, combined with a little bit of amniotic fluid, combined with some exosomes all done under sedation. This is a big treatment.

[Dave:](#) Yeah.

[Harry:](#) Usually starts around \$12,000. For doing very complex procedures it can get up to \$20K. If we are doing full-body stem cell makeover, it goes on from there. If my associate is doing it, it's half that point. Now, people have the option of just doing bone marrow. If like my associate, if somebody has arthritic knees and they need their knees injected and they just want bone marrow done, which is very effective. Just doing bone marrow on its own to have my associate do it I think is currently just under \$5,000.

[Dave:](#) Compared to the cost of a knee replacement or the cost of not being able to work for a while. This is still a lot of money, let me make no bones about it. It's not \$50,000.

[Harry:](#) Yeah, well \$5,000 is about half the industry standard for bone marrow.

[Dave:](#) I'm excited about that because there are a lot of people who will say, "You know I've had enough of being in pain, it's affecting everything I do and I'm going to save up for this. I'm going to do it." Maybe at some point we'll get insurance companies to realize it's cheaper for them to pay for that than it is for them to pay for a much more expensive procedure later. That isn't happening now that I'm aware of. Are you hopeful that insurance companies are going to cover this at some point?

[Harry:](#) Well I mean the thing is, the insurance companies aren't really interested in making healthcare less expensive. They're interested in controlling the flow of money. I think eventually it will happen, it's hard to say how it will happen or when, but we'll just sort of wait-and-see. I don't think it's going to be anytime super soon.

[Dave:](#) Yeah, that's one of those things where maybe one insurance company's going to say, "Oh we'll do this," and they'll get all of the insurance business from the people who get

a choice of where they get their health insurance. It's one of those things where this is less risk than a joint replacement surgery and it seems like you might as well try this first. That's something that actually, I did send my parents to you as a Christmas present or a birthday present or one of the two. My dad really thinks he was able to delay hip surgery for a substantial amount of time. Just because of this my mother thinks you really saved her knee.

[Harry:](#) That's great.

[Dave:](#) All right, thanks, thanks for doing that. I want to see a world where every retirement home as someone say, "All right, it's time to give all you guys upgraded." I would love to hear from both of you. If you put on your 10-year, what's in the future hats for stem cells, why don't we start Amy with your take on the cosmetic and antiaging regenerative side of things, where do you think it's going to go?

[Amy:](#) Well I think stem cells will just continue to become more available to people. I think there'll be more stem cell options maybe kind of off-the-shelf options. You can buy allogeneic stem cells from someone else who are healthy, umbilical cells, exosomes, things like this. Maybe we don't have to do a procedure on every patient, but we can get some of those products off the shelf. We'll find different ways to use them in the skin and hair that may be are less expensive because it's not quite so invasive. It will just become something that we're doing much more frequently. Cellular medicine is on the, we're doing so much more of it and we will continue to in the next five years or 10 years so much so it's going to change the way that we practice medicine just in general. It'll replace a lot of the medications and surgeries. Whether it's for aesthetics or hair or joints or anything, there's different diseases, it'll really be quite the revolution.

[Dave:](#) All right Harry, so essentially Amy before we get to your answer Harry, you're really saying it's going to be cheaper, more available and you won't have to pull someone's bone marrow to get it done? All right.

[Harry:](#) I'm pretty much of the same thing to say, it's all going to be about regulation. In this country, in the United States it's all going to be about figuring out the regulation. We know really the fountain of youth here is using culture expanded stem cells from very young sources. Either placental or umbilical cord or even bone marrow of very young people. Having the ability to culture expand them and then legally administer them therapeutically which currently we cannot do. Currently you have to go out of the country for that.

[Dave:](#) Now culture expanding is just taking your cells one time and growing a lot more of them in a lab and then injecting them?

[Harry:](#) Right. We're talking about using like umbilical cord cells or placental cells, because for me as a 50-year-old I would much rather have much younger stem cells, but you need very large quantities. You know there are umbilical cord stem cells available commercially currently, but in very low doses. I mean you can do huge doses, but it would be astronomically expensive. Culture expanding them makes it affordable.

[Dave:](#) You could take umbilical stem cells from one donor and you could grow hundreds of millions of cells from those and use those from many different people.

[Harry:](#) Right.

[Dave:](#) Today we have this whole thing setup where we're harvesting all these different umbilical cords, taking out about what, three million cells and then just using them directly instead of growing them. That doesn't make a lot of sense.

[Harry:](#) For a single dose you really need more in the neighborhood of 100 million, which you can do very easily with culture expanded cells. Really, I think that's what needs to happen, is we need to work out the regulation, which is going to take a very long time, because it's not a scientific battle, it's an economic battle.

[Dave:](#) Are there countries where you can go out and spend \$20,000 to get your own culture expanded cells or get someone else's culture expanded cells?

[Harry:](#) Yeah, just about any other country in the world.

[Dave:](#) Okay, so we're a little bit behind on that?

[Harry:](#) Yeah, you bet.

[Dave:](#) All right. There's still good reasons to get your stem cells done in the US. I've done the vast majority of what I've done here just because despite the higher expense and all that stuff, there are definitely some safety regulations that are useful. Where can people find out more about stem cells or about the whole-body makeover stuff that you guys are doing?

[Harry:](#) Well on our website docereclinics.com, D-O-C-E-R-E Clinics.com one word and we have a tab Full-Body Stem Cell Makeover.

[Dave:](#) It's right there? All right and if you are attending the sixth annual biohacking conference, you're definitely going to be able to see Dr. Harry and Dr. Amy there. They'll be speaking and I think, do you guys have a booth there as well? All right good deal, so you'll be able to talk to them there. That's April 5 through 7 at the Beverly Hilton in Los Angeles and xp.upgradelabs.com has that info and the URL where they talk about all these procedures we just covered is at D-O-C-E-R-E Clinics.com. I've got one more question for both of you, you both listen to the show, I know because we're friends. You've heard me ask this three things people want to perform better everything, you've actually answered this question. This is going to be a different one because I'm working on my antiaging book. I'll start with you Harry, how long do you want to live?

[Harry:](#) I'd say I'd be happy with 110.

[Dave:](#) 110, why?

[Harry:](#) That seems like a reasonable number to me.

[Dave:](#) That's it?

[Harry:](#) Yeah, that's it.

[Dave:](#) You're a stem cell guy and you think that's the best you can do?

[Harry:](#) I don't know I think I can probably run it out further than that, but I don't know, that number works for me.

[Dave:](#) That's your number, all right. I'll try to call you a wuss, just kidding. Amy what's your answer now that we have death shaming [crosstalk 00:52:45]?

[Amy:](#) I would like to live well to about 130, I think.

[Dave:](#) Okay.

[Amy:](#) Where I'm just super healthy and then at the very end I just fall off the cliff and that's it.

[Dave:](#) All right, what else are you doing Amy to get you there besides stem cells?

[Amy:](#) Stem cells are a big part of it. I mean just general good lifestyle choices I think is the other part of it. I do a lot of mind-body work, yoga. I try to eat healthy, exercise regularly, have a lot of good close friends and family connections, which I think is really important for longevity. There's a lot of many things. I don't take a ton of supplements, right now I try to just eat healthy, but right now I'm really just focusing mostly on keeping my mind healthy and surrounding myself with positive people and good influences. I'm working on that part of it right now.

[Dave:](#) All right, Harry what are you doing to live to just 110?

[Harry:](#) Under-promising and over-delivering.

[Dave:](#) Oh he's sandbagging. It's like, "I'm going to beat you Dave, I just don't want to say it," all right. Now you've earned some respect back on that one Harry.

[Harry:](#) I have the most fantastic family at home.

[Dave:](#) There you go. Having a good family will always help. All right, there you go. I think that you learned some more about stem cells and we went deep on the really unusual procedure that I just went through. I want to be the guinea pig for you so that you can figure out whether the return on investment for you and eating a different way, exercising a different way, sleeping in a different way, doing any of the other things that you might choose to do is worth it, including stem cells. I'm 100% convinced having done several different rounds that these have been a really big change for me. I'm in my mid-40s, granted I had a lot of these sort of aging-associated conditions way earlier in

life than the average person and I'm beyond them now. I'm truly grateful for that and I just want you when you listen to this to say, "No. 1, it's possible, and No 2, I don't have to spend nearly as much as what Dave did getting there." I've done everything I can possible find and a lot of it just didn't work or didn't work very well or we didn't have the knowledge when I started doing this 20 years ago. It's about the best time ever to decide you want to get younger or you want to stay young or you just want to perform better, because you're already young.

Dave: You want your career to work right and you just want to be able to do more than you're supposed to be able to do. It's more possible now than it's ever been. Talking about cool stuff like exosomes is part of the path of getting there.

Dave: If you liked today's episode, you know what to do. If you're interested in stem cells, head on over to docereclinics.com and check out what's there. There's photos and just other good information for you. I think it's worth your time, worth your energy, it's worth investigating.